

Product Information Sheet

March 25, 2015

PSC 2304 Exterior Epoxy (UV Resistant Flexible Epoxy)

PSC 2304 Exterior Epoxy is a two component, self-leveling, 100 % solids tintable epoxy coating. Both components are precisely measured and packaged for easy and accurate on-site mixing and use. PSC 2304 Exterior Epoxy is a high build epoxy coating system designed for applications up to 20 mils. Being UV Resistant means that compared to all of the epoxies and most coatings, the effects due to UV radiation are less pronounced. Yellowing can eventually happen, the severity and time span before this occurs will depend on specific conditions of the UV exposure.

PSC 2304 has excellent resistance to humidity and can be applied under high humidity conditions without creating a foggy surface. It has good flexibility, impact and abrasion resistance and thermal resistance. The surface of PSC 2304 Exterior Epoxy is self healing from minor scratches providing excellent abrasion resistance under the most demanding conditions. It resists yellowing from UV exposure and is suitable for exterior or interior applications.

PSC 2304 Exterior Epoxy is approved by CFIA (Canadian Food Inspection Agency) for incidental contact in federally and provincially inspected meat and poultry plants

Uses

- Exterior or interior, new or old horizontal concrete surfaces.
- In addition to concrete, it is also suitable for applications where the substrate is wood or engineered wood boards.
- Industrial, commercial, municipal and warehousing facilities.
- Dairies, canneries, meat packing and food processing plants, paper mills.
- For broadcast with multi-colored quartz aggregate.
- Designed for one coat applications up to 20 mils. Thickness of the coating can be build up with several applications within the re-coat window.
- Applications subjected to UV radiation, interior or exterior.

Advantages

- Produces a smooth, seamless finish.
- Flexible, self healing.
- Excellent wear resistance in harsh industrial environments.
- Good chemical resistance.
- Fills and hides minor surface imperfections, bridges hairline cracks.
- Excellent workability, low odor, can be tinted.
- Decorative, add color or quartz.
- Can be mixed with aggregate to be used as filler.
- Withstands temperature extremes and thermal shock without cracking or peeling.
- Can be applied in high humidity conditions.
- Easy application with squeegee, roller or trowel.
- VOC zero.

PSC 2304 is designed to

- Waterproof new or existing indoor or outdoor structures.
- Reduce maintenance costs associated with unprotected concrete.
- Protect from deterioration of reinforcing steel caused by ingress of chloride, acids etc.
- Protect concrete from various chemicals, like gasoline, aviation fuel, alkalis and solvents.
- Prolong the life of the concrete floor or any horizontal concrete structure.
- Protect concrete from leakage and moisture intrusion.
- Prevent scaling and spalling.

How does PSC 2304 perform?

- It bonds to concrete and becomes an integral part of the concrete surface.
- It is liquid applied to form a seamless protective barrier.
- Aggregate (consult PSC) can be embedded in the coating to create a durable, skid resistant surface.

- PSC 2304 Exterior Epoxy System is sustainable for the life of the floor.

Suggested System Components

- Primer : PSC 2099 Bonding Primer (for use, refer to Product Information Sheets re. PSC 2099) or PSC 2304 diluted with max. 10 % PSC Epoxy Reducer.
- Topcoat or intercoat : PSC 2304 Exterior Epoxy.

Limitations

- Avoid applying PSC 2304 Exterior Epoxy (or any polymer coating) in direct sunlight during times of extreme heat. This can cause air bubbles being caught under the surface of the coating, wrinkling, blistering and pinholes. Schedule the application for early morning or late afternoon when ambient and substrate temperatures are low.
- PSC 2304, or any 100 % solids epoxy coating, cannot be used for applications where hydrostatic pressure exceeds 3 psi/1000 sq. ft. A proper vapor barrier must be installed under the slab if applying PSC 2304 or any epoxy coating.
- PSC 2304 Exterior Epoxy is not intended for immersion or applications below the grade or applications where moisture can reach the underside of the coating.
- Protect both components A and B from freezing.
- Do not apply if ambient or substrate temperature is below +15° C (+60 F) or over +30° C (+86 F).
- Do not thin (except for priming purposes). Addition of thinners will slow down the cure and reduce the qualities of this product. Critical re-coat times will also be affected.
- Do not spray this product.

General data

- Standard Colors : Clear, 01, 03, 04, 06, 10, 11, 13, 21, 30, 35, 36, 40, 41, 60, 63.
- Solids Content : 100 %
- VOC : 0
- Viscosity @ 25° C : 1400 CPS
- Appearance : Clear
- Finish : Glossy
- Mix Ratio : Mix one volume of resin (A) with one volume of hardener (B).
- Mixing Method : Low speed jiffy mixer.
- Pot Life : 40 minutes @ +20° C (+68° F).
- Thinning : Not recommended.
- Drying Time : @ 26° C (80° F)
 - Tack free time : 18 hours
 - Re-coat time : 18 to 30 hours
 - Light foot traffic : 18 to 36 hours
 - Full cure : 72 hours
- Flash Point : Greater than +280° C (+536° F)
- Specific Weights : Resin 9.6 lbs/USG
Hardener 8.1 lbs/USG
- Recommended WFT : 6 to 20 mils per coat.
- DFT @ 6 mils WFT : 6 mils.
- Coverage @ 6 mils WFT : 270 sq. ft. / USG.
- Application Method : Squeegee, roller or trowel.
- Shelf Life : 6 months in unopened container.

Low surface temperatures and / or high ambient humidity may require longer curing time.

System estimating guide

- As primer, diluted with max 10 % PSC Epoxy Reducer, film thickness @ 5 to 6 mils, coverage 270 to 320 sq. ft. per USG.
- As topcoat, using a squeegee, roller or trowel, film thickness @ 12 to 20 mils, coverage from 80 to 130 sq. ft. per USG.
- As topcoat, using a squeegee, film thickness @ 6 to 12 mils, coverage from 160 to 270 sq. ft. per USG.
- Coverage will vary according to surface texture and porosity.

Cured resin performance for PSC 2304 Exterior Epoxy

Description	Test Method	Results
Solids content	ASTM D2697	100 %
Elongation at break	ASTM D638	30 – 80 % depending on temperature
Adhesion	ASTM D4541	350 psi (failure of concrete)
Fungus/bacteria resistance	Mil-F-52505	No support of growth (TT-P-34)

Maximum temperature limits for PSC 2304 Exterior Epoxy

Dry heat : +110° C (+230° F)

Spills	+66° C (+150° F)
Immersion	+66° C (+150° F)
Cold	-40° C (-40° F)

Above temperature limits are laboratory test results.

Test section

Apply PSC 2304 Exterior Epoxy in an inconspicuous area measuring approx. 5 ft by 5 ft and evaluate for compatibility with an existing coating if any, for proper adhesion. Follow the surface preparation and application instructions.

Preliminary floor inspection and surface preparation

The area to be coated must be clean, sound, dry and above +15° C (+60° F) and less than +30° C (+86° F) to assure a successful application. Concrete must be at least 28 days old. Test for vapor drive according to ASTM D4263.

If there is uncertainty as to whether or not a curing compound or any coating is present on the floor, the following test can be performed:

- Pour a cup of water on three or four areas on the floor. If the water puddles out, then there probably is not any curing compounds or coatings on the floor and the preparation process may begin. If the water beads up like rain on a waxed car, then curing compounds or any other coatings may be present. These must be removed either by chemical or mechanical means.
- Place a drop of muriatic acid on the floor. If the acid bubbles, a curing compound or any other coating is not present.

The concrete substrate must be examined for the presence of moisture. Test vapor drive according to ASTM D4263. The vapor drive should not exceed 3 lbs. / 1000 sq. ft. / 24 hours. Follow instructions as outlined by the supplier of the test kits. Make sure the concrete surface to be tested is completely clean of any residue or other debris. All sealants, curing compounds or coatings must be removed before testing.

Remove all oil, grease, wax, dirt, laitance and other surface contaminants. Mechanical methods are recommended to clean concrete, such as shot-blasting, scarification, sandblasting and high pressure water blasting. Next sweep and vacuum any remaining dirt and dust with wet / dry vacuum.

Contaminants may also be removed by scrubbing with PSC 0100 Cleaner / Degreaser, followed by thoroughly rinsing and scrubbing with clean water. Do not use unbuffered acid, or any solvents to remove contaminants. Do not use sweeping compounds to remove dust.

Use of PSC 2099 Bonding Primer

Dense new surfaces, such as tile, stone (should contain silicate), smooth concrete, densified concrete etc., **that have not been contaminated** with oil, dirt, grease, curing compounds or other bond breakers, can be primed with PSC 2099 Bonding Primer thus eliminating expensive surface preparation, like shot blasting, scarification or grinding.

Refer to Product Information Sheets for PSC 2099 Bonding Primer.

Mixing and tinting

PSC 2304 Exterior Epoxy may be applied clear or tinted. Clear PSC 2304 is prepared by accurately measuring the required amounts, 1 Part by volume of resin (A) and 1 Part by volume of hardener (B), into a clean mixing container. Pour the components slowly to avoid introducing air bubbles. Mix for 2 to 3 minutes. Scrape the sides and bottom of the mixing container to ensure complete mixing.

Tinted PSC 2304 is prepared by first mixing resin (A) and the colorant together, then mixing hardener (B) into the tinted Part A. Do not count colorants into the volume ratio of Part A, resin, or Part B, hardener. When using more than one can of colorant, it is recommended to mix all the colorant cans in a container prior to use in order to get a consistent color. This is due to the unavoidable variations between cans/ batches or small amounts of colorant left in the cans.

- The Part A, resin, must be thoroughly mixed with colorant prior to the addition of Part B, hardener.
- Carefully empty the contents of Part B, hardener, entirely into the mixing container of Part A, resin.
- Mix with very low speed jiffy mixer, until completely blended. Be careful not to introduce air bubbles when mixing.
- Due to difference in viscosity between Part A, resin, and Part B, hardener, care must be taken to thoroughly mix both components in order to avoid partially cured and weak spots in the coating.
- When using a 110 gallon bulk drum unit use mixing ratio of 1 Part A, resin, and 1 Part B, hardener, by volume. Do not count colorants in the volume ratio.
- Accuracy in measuring and mixing the components is essential to the performance of the product, and if tinted, to the color consistency between batches.

Colorant data

Kit size	Colors # 01, 03, 04, 06, 20, 21, 36, 40, 41, 63	Colors # 10, 11, 30, 35, 60
2 gallon kit	0.5 quart	1 quart
10 gallon kit	2.5 quarts	5 quarts
110 gallon bulk kit	Consult Polymer Science Corporation	

Application

- Apply by first pouring a bead of the material in the form of a ribbon on the surface to be coated. Do not leave the material in the container for too long because it will set faster thus reducing the pot life.
- Using a serrated squeegee, spread the poured material at desired thickness. Do not exceed 20 mils with one coat. Apply as evenly as possible with slow steady motion in one direction.
- Back roll using a high quality nap roller. Avoid excessive agitation of the liquid with the roller, particularly if applying a thin coat between 6 to 12 mils as it may leave bubbles or pinholes in the applied film.
- Roll thicker built surfaces, 12 to 20 mils, with a porcupine roller after 10 minutes to remove bubbles if any.

PSC 2304 Exterior Epoxy is designed to be used as it is and therefore thinning or reducing with solvents is not recommended.

The pot life of PSC 2304 is approximately 40 minutes at +20° C (+68° F). High temperature and high humidity will accelerate curing and reduce pot life. PSC 2304 is not a solvent based system therefore the pot life is relatively short. Do not mix more batches of material that can be used within this period of time.

Curing time

The floor area should be maintained at a temperature range of +15° C (+60° F) or less than +30° C (+86° F) during application and curing.

For heavy wheeled traffic and/or chemical spillages, allow minimum of 72 hours cure.

Temperature	+15° C (+60° F)	+20° C (+68° F)	+30° C (+86° F)
Tack free	24 hours	18 hours	10 hours
Re-coat	24 to 36 hours	18 to 30 hours	10 to 14 hours
Full cure	72 hours	60 hours	30 hours

If PSC 2304 is allowed to cure longer than 24 (@ +20° C / +68° F) hours before subsequent re-coats, screening will be necessary. The surface should be screened to the effect that a uniform dullness is achieved. There should be no gloss present on the floor before applying the next coat.

Clean up

Equipment should be cleaned immediately after use with solvents such as PSC Epoxy Reducer.

Trouble shooting

Problem observed	Possible causes
Fish eyes	Oil contamination Improper substrate cleaning Mold release agents
Peeling from substrate	Improper mixing Insufficient preparation process Oil impregnation Moisture in concrete
Peeling between coats	Hydrostatic water pressure Past critical re-coat time
Coating soft, dulling	Contamination between coats Improper mixing Extreme weather conditions
Whitening	Use of thinner in product Excessive exposure to moisture from substrate Water on the surface during drying
Slow cure	Exposure to pooling water after full cure Low substrate and ambient temperatures Use of thinner in product Product applied too thin

Pigment flooding, floating or color streaking
Fast cure
Bubbling

Wrong ratio re. Part A and Part B
Part A was not premixed with colorant adequately
High substrate and ambient temperatures
High temperatures
No primer used
Working product past pot life
Improper mixing
Overworked the product

Quartz Broadcast

Consult Technical Bulletin regarding PSC Granite Quartz 122 System.

Seeded Floor System

Requires one coat of tinted PSC 2304 Exterior Epoxy over primed substrate at 15 to 20 mils, seeded with 30 – 40 mesh round sand at 0.75 lbs./0.34 kg per sq. ft. Allow to dry overnight then remove excess sand. Apply second coat of tinted PSC 2304 and sand as before. When second seeded coat is dry and excess sand has been removed, application can be top coated with tinted or clear PSC 2304 Exterior Epoxy.

Slip Resistant Flooring and Coating

Approved aggregate can be embedded into PSC 2304 Exterior Epoxy to create a durable slip resistant surface providing very good compressive and tensile strength properties designed for areas requiring a slip resistant finish. These properties are especially applicable in highly oily manufacturing and assembly plants, forklift ramps and docks, showers, lobbies and maintenance shops.

The engineered slip resistance requirements can be met by a selection of various grades of additives. The degree of density of application can be altered for each facility's requirements. Evaluation should be made to determine the right amount of aggregate for the specific needs of the surface.

Recommendations

- Always apply a test patch in an inconspicuous area. Confirm compatibility with the substrate and that the application meets owner's expectations.
- Seal product containers immediately after use.
- Store product cool and dry at temperatures above +10° C and below +30° C.
- Use a single container to accurately measure the volume of Part A and Part B.
- For accuracy in transfer, scrape the walls of the measuring container.
- Use only clean and dry equipment.

Exposure Risks

PSC 2304 contains isophorone diamine and other proprietary aliphatic polyamines.

Corrosive, may cause severe eye and skin burns. Harmful or fatal if swallowed. Aspiration hazard if swallowed, can enter lungs and cause damage. May cause allergic skin reaction. May cause blindness.

Proposition 65

This product contains chemicals listed by the State of California as known to cause cancer, birth defects, or other reproductive harm.

VOC Content

Part A and Part B combined contain 0 g/L of VOC.

Shipping Information

Hazardous goods, class 8, UN 1760, PG III.

Precautions

Keep out of reach of children. Avoid all personal contact. Use rubber gloves, eye protection. Use adequate ventilation. If the TLV is exceeded or if primer is used in a poorly ventilated area, use NIOSH / MSHA approved respiratory protection in accordance with applicable federal, state, provincial and local regulations. Avoid breathing vapors.

Seal containers after use. Empty containers may contain hazardous residues. All warning labels must be observed until containers are commercially cleaned or reconditioned.

First Aid

In case of eye contact, flush thoroughly with water for at least 15 minutes. Seek immediate medical attention. In case of skin contact, wash affected areas with soap and water. If irritation persists, seek immediate medical attention. If inhalation causes physical discomfort, persists or any breathing difficulty occurs, seek immediate medical attention. If swallowed, seek immediate medical attention.

Refer to Material Safety Data Sheets (MSDS) for further information.

Safety

We certify that PSC 2304 Exterior Epoxy is formulated without lead, mercury, asbestos or chromates.

Maintenance

PSC Maintenance Products are specifically formulated to protect and maintain the appearance of PSC coatings. Consult Technical Specifications for above for performance details.

To clean the surface, use periodically PSC 0150 Cleaner- Rejuvenator. To protect the surface, use regularly PSC 0200 DuraWax-Gloss or PSC 0210 DuraWax-Satin liquid waxes.

Packaging

2 gallon kit (7.56 liter kit)

10 gallon kit (37.8 liter kit)

110 gallon bulk kit (415.8 liter kit)

Warranty Disclaimer

We guarantee our Products to conform to the specifications of Polymer Science Corporation. Polymer Science Corporation makes no warranty or guarantee, express or implied, including warranties of fitness for a particular purpose or merchantability, respecting its Products. Liability, if any, is limited to refund of purchase price or replacement of the Product. All consequential damages, labor and cost of labor are hereby excluded.

For orders or inquiries from Canada, US and Mexico, call toll free 1-866-793-3503, fax your orders to PSC's customer service @ 403-287-2766 or email @ sales@polymersciencecorp.com.

Polymer Science Corporation develops and manufactures specialty chemicals, industrial and architectural coatings of highest quality. Ask the people who use them.